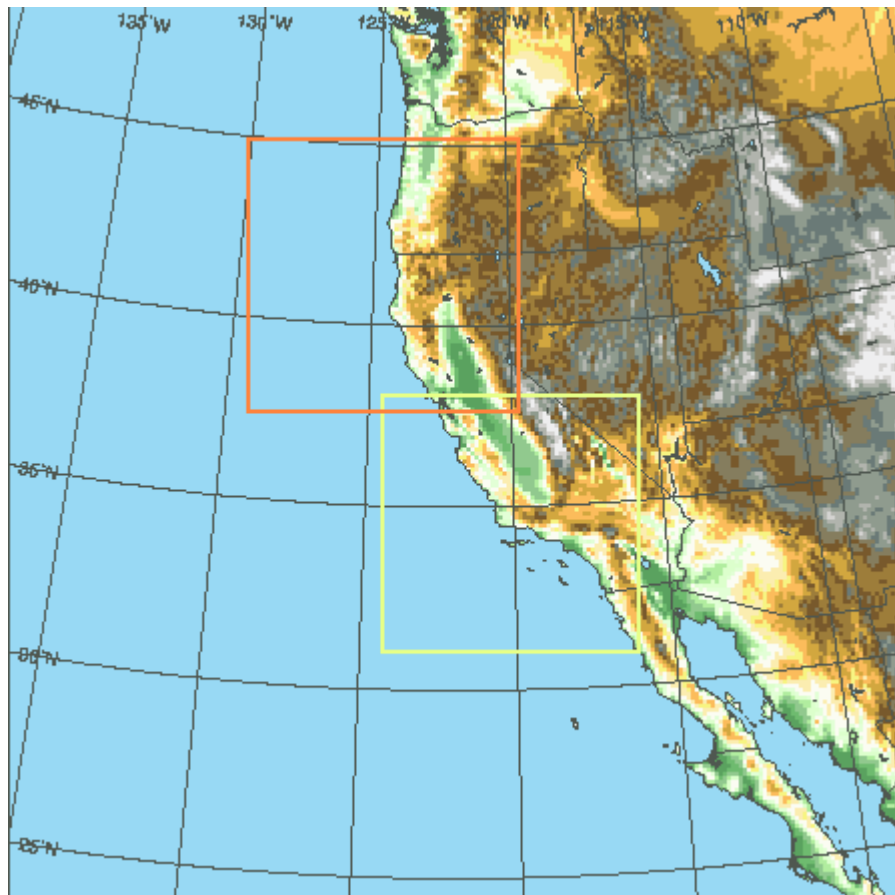


# **VLTRACK - TEDS Interface**

**for**  
**Coupled Ocean/Atmosphere Mesoscale**  
**Prediction System – On Scene**  
**(COAMPS-OS)**



## **User's Guide**

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# 1 INTRODUCTION

## 1.1 VLSTRACK OVERVIEW

The U.S. Navy's Chemical/Biological Agent Vapor, Liquid, and Solid Tracking (VLSTRACK) transport and dispersion model provides approximate downwind hazard predictions for a wide range of chemical and biological agents and munitions of military interest. VLSTRACK features smart input windows that check input parameter combinations to ensure that a reasonable attack is being defined and simple and informative output graphics that display the hazard footprint for agent deposition, dosage, or concentration. Output can be obtained either as a cumulative hazard from the time of the attack or as a periodic hazard for each time period. The model also features variable meteorology, allowing for interfacing the attack with a meteorological forecast; this feature is very important for biological and secondary evaporation computations. A vertical wind profile forecast can also be used for high-altitude releases. For quick estimates, the model features a rapid approximation option for each of the attack situations that can be used for preliminary hazard evaluation. The rigorous calculations can be performed if a more accurate hazard estimate is required and time permits. The rigorous calculations may require an hour or more to model biological plumes, large numbers of munitions, and secondary evaporation.

Sponsor and/or Developing Organization:

Department of the Navy  
Naval Surface Warfare Center Dahlgren Division  
17320 Dahlgren Road  
Dahlgren, Virginia 22448-51003

## 1.2 COAMPS-OS OVERVIEW

The NRL Coupled Ocean/Atmosphere Mesoscale Prediction System (COAMPS-OS) is an automated, portable, atmospheric nowcast/forecast/data assimilation system. COAMPS-OS allows you to independently ingest local observations, satellite-derived observations, and boundary conditions from a central or regional center and maintain an organic data assimilation, nowcast, and forecast capability. COAMPS-OS is built around the atmospheric component of the NRL Coupled Ocean/Atmosphere Mesoscale Prediction System (COAMPS) and includes automated complex quality control (QC) software, a multivariate optimum interpolation (MVOI) atmospheric analysis, and the COAMPS Ocean Data Assimilation System (CODA).

## 1.2 VLSTRACK - TEDS INTERFACE OVERVIEW

The VLSTRACK - TEDS Interface is a user-friendly, web-based GUI to supply high resolution COAMPS data to VLSTRACK. COAMPS-OS generates the COAMPS data and stores the data in the TEDS database. The forecast times and geographic areas of interest determine the COAMPS data available to VLSTRACK through the VLSTRACK – TEDS Interface. As soon as COAMPS data is stored in the TEDS database, it becomes available for external applications such as VLSTRACK. The VLSTRACK - TEDS GUI allows the user to select an area of interest and a forecast period to retrieve a subset of COAMPS data that is compatible with VLSTRACK. A unique feature of the VLSTRACK - TEDS Interface is the ability to operate on any computer platform (including both Windows and UNIX environments) capable of running a web browser with the Java Plugin. Requirements and capabilities of the VLSTRACK - TEDS Interface are detailed in the sections that follow.

## 2 GETTING STARTED

To install the following software, you will need system administration privileges.

### 2.1 SYSTEM AND SOFTWARE REQUIREMENTS

The VLSTRACK - TEDS Interface will run on any computer platform. Whether you choose a PC or UNIX machine to access the VLSTRACK - TEDS Interface, it must be capable of running a web browser. Of the available web browsers, it is recommended that you use either **Internet Explorer 4.0**(or greater) or **Netscape 4.03** (or greater). As well, **Java Runtime Environment (JRE) 1.3.0** and **Java Plug-in 1.3.0** must be loaded on the system. JRE will allow your browser to run the VLSTRACK - TEDS Interface Java applet. The Java Plug-in serves as a supplement that will allow your browser to support the latest version of Java, as well as providing additional security features. The most up-to-date JRE, Java Plug-in, and corresponding documentation can be obtained from the following web site: <http://java.sun.com>.

#### 2.1.1 Configure System Permissions

The VLSTRACK - TEDS Interface provides the capability to download COAMPS data over the internet to the hard drive on your PC or UNIX machine. The

Java Plugin requires users to explicitly grant permission to download files onto the local system. The permission is granted by signing the applet after the applet is opened. The VLSTRACK – TEDS Interface Java applet has been digitally signed through Verisign, Inc. See section 2.2.3 for more information about signing the applet.

## 2.1.2 Disk Space Requirements

Disk space requirements may range between a few Megabytes to over 1 Gigabyte. The exact space requirements depend upon the spatial resolution and time interval of the data request.

## 2.2 EXTERNAL REQUIREMENTS

### 2.2.1 Required Settings in COAMPS-OS

It is important to confirm with your local COAMPS-OS administrator that appropriate COAMPS parameters are set to satisfy the requirements of the VLSTRACK-TEDS Interface. The requirements are shown in Table 2-1.

**Table 2-1 RECOMMENDED MINIMUM COAMPS DATA SET**

**Table 1. Single Level Parameters**

<b>Parameter</b>	<b>GRIB/TEDS Parameter ID</b>
10-mb Cloud Cover	71
2-meter Relative Humidity	52
Surface Topography	8
Surface Roughness	83

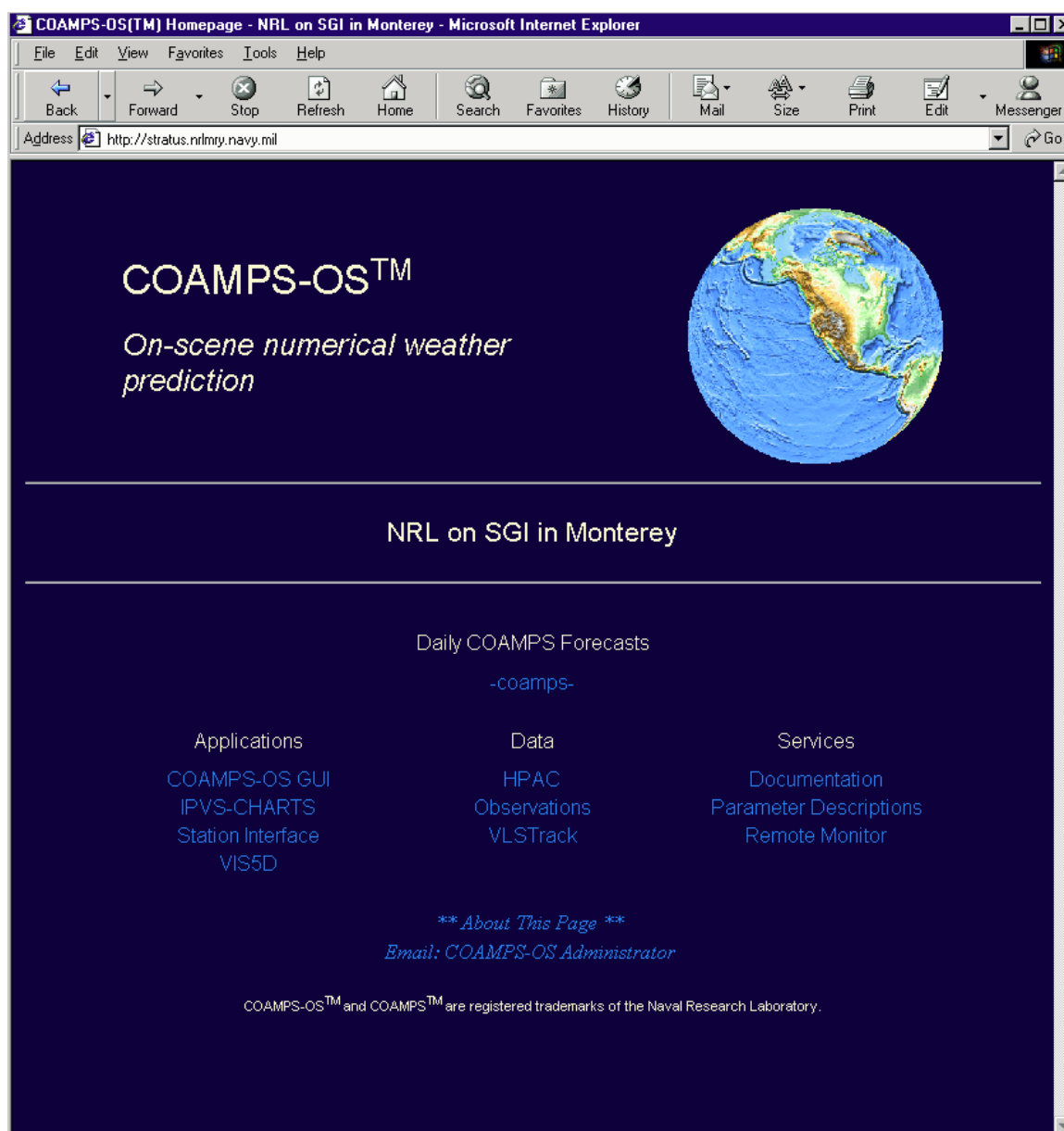
**Table 2. Sigma Level Parameters**

<b>Parameter</b>	<b>GRIB/TEDS Parameter ID</b>
Pressure	1
Potential Temperature	13
U-Component of Wind	33
V-Component of Wind	34
Vertical Velocity	40
Humidity Mixing Ratio	53
Total Cloud Cover	73

The output frequency for sigma level fields must be three hours. Each sigma level field should have data for 30 levels.

## 2.2.2 Accessing The VLSTRACK - TEDS Interface

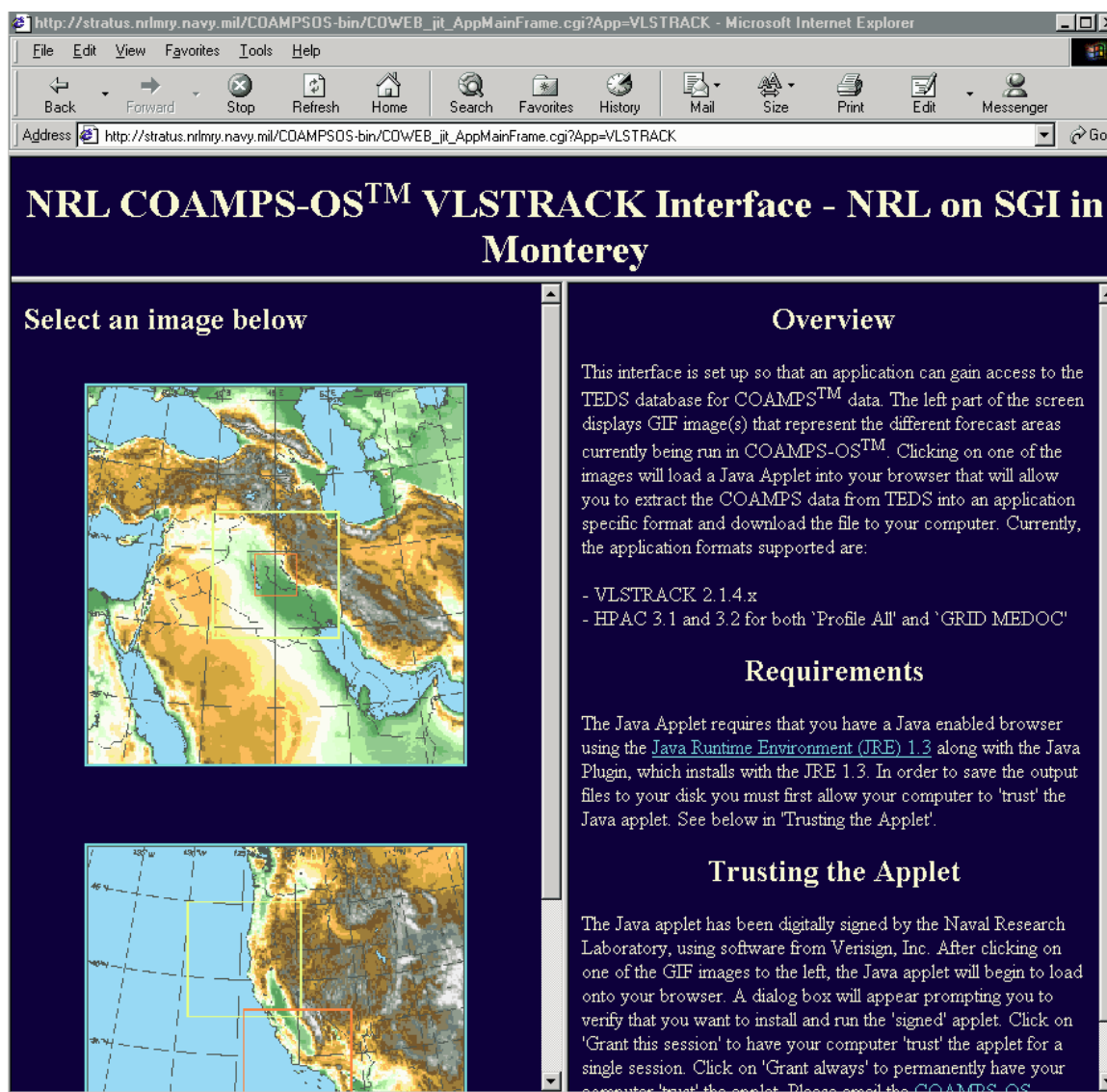
The VLSTrack - TEDS Interface software is maintained on the web server where COAMPS-OS is installed. To access the VLSTrack - TEDS Interface, open a web browser and type in the web address (URL) provided by your COAMPS-OS administrator. The address will open up the local COAMPS-OS homepage. Under Applications, select VLSTrack (Figure 1).



**Figure 1.** The VLSTRACK - TEDS Interface is one of several applications that may be accessible via the COAMPS-OS Homepage.

## 2.2.3 Available Regions

After selecting VLSTrack from the Applications tab, a new screen will load and prompt you to select a region of interest (Figure 2). Each image represents a COAMPS area defined in the COAMPS-OS project(s) currently running. If your area of interest is not available, contact your COAMPS-OS administrator to setup a new COAMPS forecast area. Click on the desired area to run the VLSTrack – TEDS Interface. A dialog will appear prompting if you want to install and run the signed Java applet. Select ‘Grant this session’ to establish permissions temporarily for your current session. Select ‘Grant always’ to establish permissions ‘permanently’ for your machine. If you do not select one of the above, the VLSTrack –TEDS applet will not be able to download and save the COAMPS data file to your local hard drive.



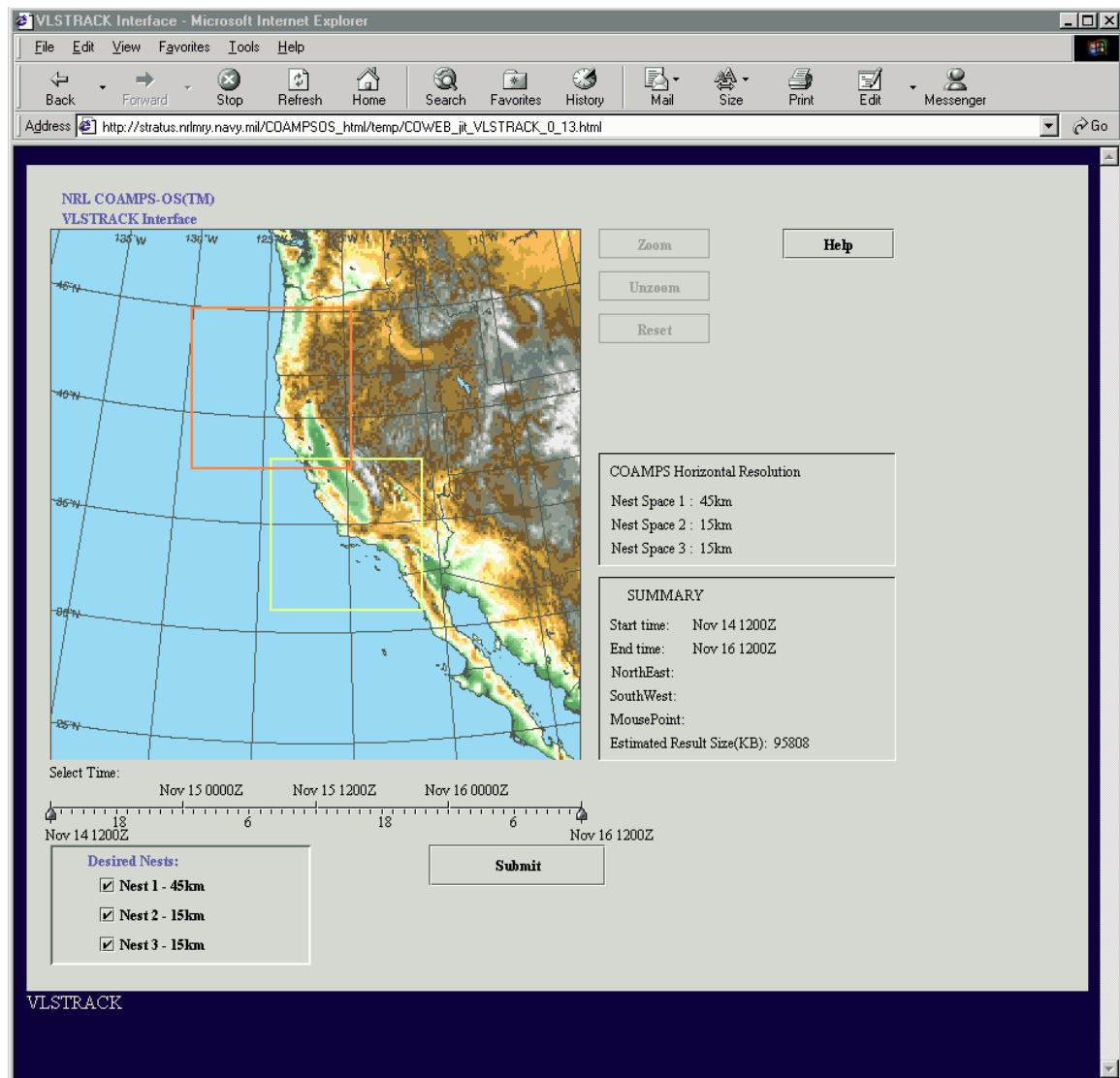
**Figure 2. After selecting VLSTRACK from the COAMPS-OS Homepage, this window will appear. In the left frame you can select from the available COAMPS areas by clicking on a thumbnail image. The right frame contains a basic overview of the interface and system requirements.**

## 3 USING THE VLSTRACK - TEDS INTERFACE

### 3.1.1 The VLSTRACK Data Retrieval Screen

After accepting the Java plug-in's prompt to install and run the signed applet, the VLSTrack - TEDS Interface Java applet will load and run within your browser (Figure 3). The VLSTrack data retrieval screen consists of an editable map image; a selectable time scale; a desired nests region; Zoom, Unzoom, Reset, and Help buttons in the upper right; summary information boxes; and a Submit button at the bottom. Figure 3 shows a map of the outer nest of a COAMPS region with two inner meshes shown as red and yellow boxes. A user selected area is defined by clicking and dragging the mouse across the image. The area is represented as a white dashed box (not shown).





**Figure 3.** After selecting a thumbnail image, the VLSTrack-TEDS Interface applet will load.

### ***What is in the summary boxes?***

The first summary box contains the COAMPS Horizontal Resolutions of each nest. The second summary box contain your starting tau, ending tau, the Northeast corner of the area you selected, the Southwest corner of the area you selected, the current position of the mouse in Latitude and Longitude when the mouse is within the map image, and the estimated size of your return file. When the mouse is not within the map image, the current values are blanked out. The estimated size of the return file is displayed in kilobytes. Note: 1000 kilobytes = 1 Megabyte.

## **3.1.2 Procedure Overview**

The VLSTRACK – TEDS server requires a time frame and the desired nests to create a data file. After selecting the required parameters, press the Submit button to download COAMPS data.

### 3.1.3 Selecting An Area

To select an area, place the mouse pointer anywhere in the map image you wish to select. This will define the upper left coordinates of your area. Click any button on your mouse. Holding the button down, drag the cursor to the opposite (lower right) coordinates of your desired area, and release the button. The box with white dashed lines represents your area. Change your area by placing the cursor over one of the dashed lines in your area box. The cursor will change shape from a single pointed arrow to a double pointed arrow. The box will expand or contract as you click and drag your mouse to your desired location. When you are done, release the mouse button. To move your area, click anywhere in your box. The cursor will change its shape from a single pointed arrow to a 4-pointed arrow. Drag the cursor to your desired location and release the mouse button. If you wish to remove your area box, click anywhere on the map outside of your area box. The box will disappear. Note that the northeast and southwest latitudes and longitudes of the selected area and the position of the mouse within the image are dynamically updated and displayed in the summary box in the lower right corner of the applet.

### 3.1.4 Zooming In

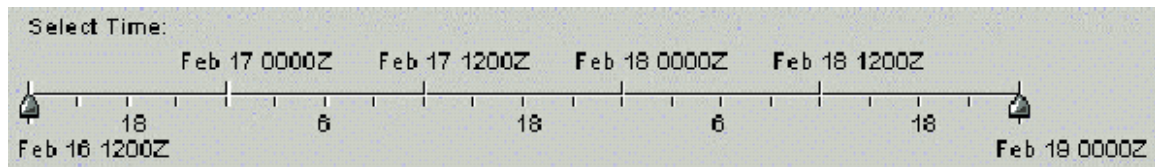
Select an area and press “Zoom”. A new map image will appear. Each time you press the Zoom button, the map image will increase to the size and shape of the box you selected. Although it is possible to zoom in indefinitely, the terrain resolution is limited to 4-km.

### 3.1.5 Reset After Zooming In

If you have zoomed in several times, press “Unzoom” to return to a previous map image. Press Reset if you wish to return to the original map image. If you have only zoomed in once, either button will return to the original image.

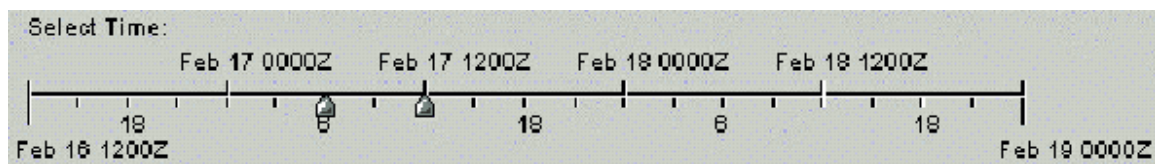
### 3.1.6 Selecting A Time Range

You must select a start and end time from the time selection bar (Figure 4). Tick marks on the time scale represent available hours from COAMPS forecast fields in TEDS. The hours are relative to the base time from which the forecast was made.



**Figure 4. The time selection bar.**

Select a starting time by clicking (with any mouse button) on the left most time pointer. Hold the mouse button down and drag the pointer to your desired starting time. Select an ending time by clicking (with any mouse button) on the right most time pointer. Hold the mouse button down and drag the pointer to your desired ending time. Figure 5 shows an example of selecting a 6-hour time period beginning at 0000Z on 17 February with an ending time of 1200Z on 17 February.



**Figure 5. Selecting a beginning and end time.**

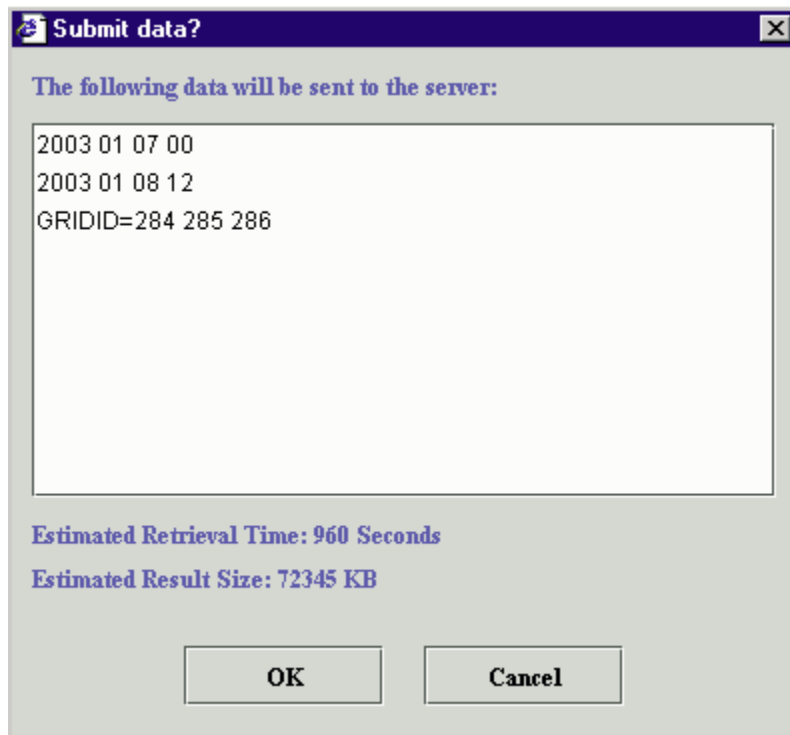
Note: Start and end times are dynamically updated in the summary box. The more hours you select, the longer it will take for your request to be completed.

### 3.1.7 Selecting The Desired Nests

You must select at least one nest (bottom left corner). You can select up to three nests. To select a nest, simply check the box next to the desired nest number.

### 3.1.8 Submitting Your Request

After you have fulfilled the requirements for selecting an area, time range, and output type, the Submit button will become active. Simply click the Submit button to begin the process of data retrieval. A Submit Data dialog box will appear (Figure 6).

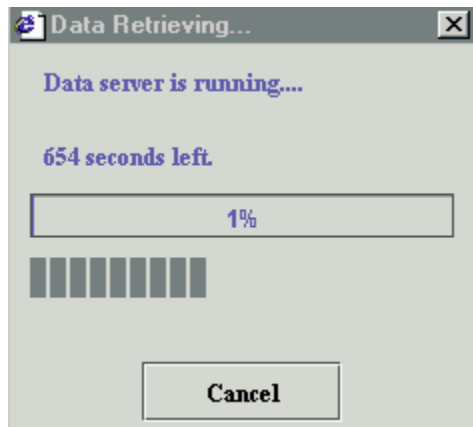


**Figure 6. Confirmation of user data request. Data from three nests was requested in this case.**

The Submit Data box will contain a summary of your request, estimated time of retrieval, estimated file size, and OK and Cancel buttons. The request summary includes (by order of appearance): starting time, ending time, and grid ids of desired nests. If you are satisfied with the information, select the OK button to proceed. Otherwise, select the Cancel button if you wish to make changes or do not wish to continue.

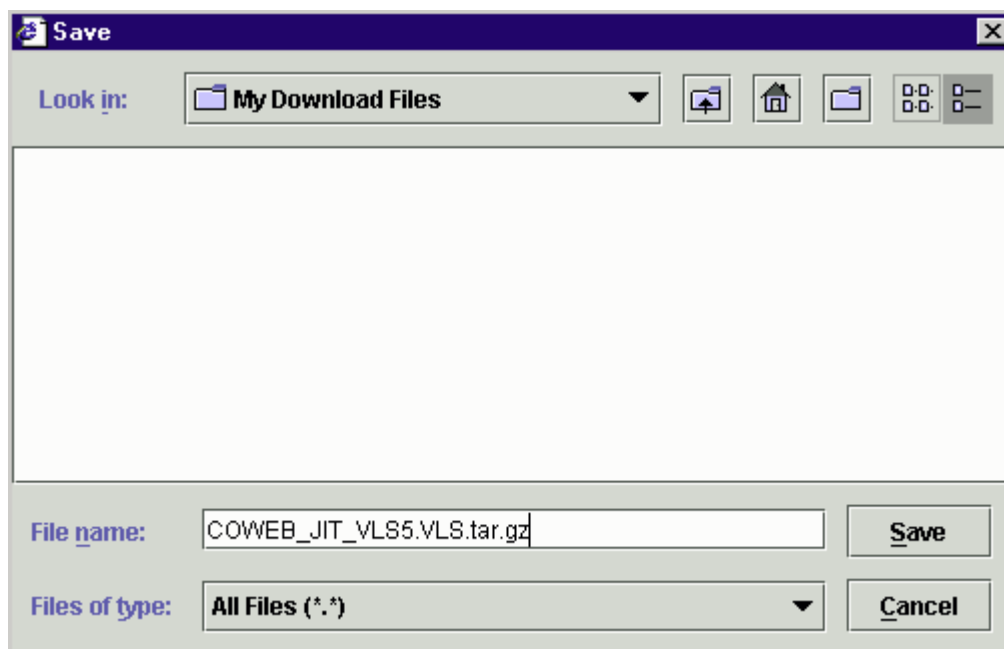
The estimated time is based on the time interval selected. To speed up the retrieval (and also reduce the size of the meteorology file) reduce the number of Taus and/or reduce the number of nests selected. The estimated size is based on the time interval and the number of nests selected.

As the data is downloading, a data retrieval dialog box will display the percent data that has been acquired and the time remaining to complete the process (Figure 7). Press the Cancel button if you wish to halt the process of data retrieval.



**Figure 7. Data retrieval status box.**

After the data has been retrieved, you will be prompted to save the file to a directory of your choice as shown in Figure 8.



**Figure 8. Prompt to save the data file.**

The default file name will be COWEB\_jit\_VLSxxx.VLS.tar.gz , where the x's represent a sequential number generated by the server. You may change the default file name if you wish. After selecting the file name and directory, click Save. A message will appear that the file has been downloaded successfully (Figure 9). Click OK to acknowledge.



**Figure 9. Confirmation of data download.**

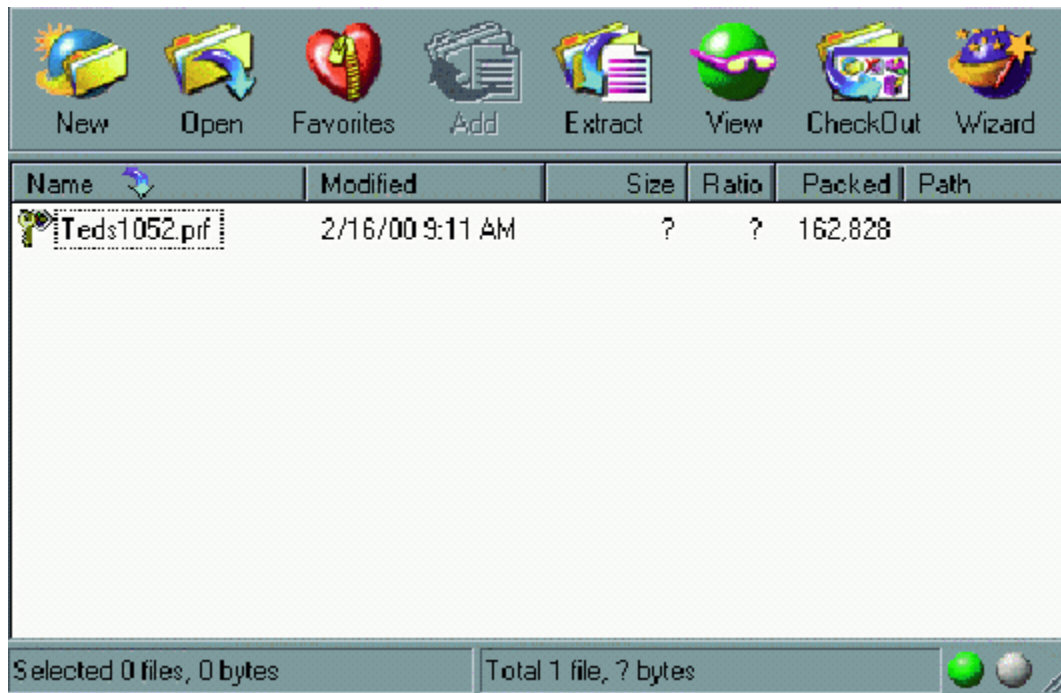
### ***What is in the Summary Boxes?***

The first summary box contains the COAMPS horizontal resolutions of each nest. Use the numbers as a guide to determine the maximum possible resolution for MEDOC Grid output type with respect to the area that you wish to select.

The second summary box contains your starting time, ending time, the northeast corner of the area you selected, the southwest corner of the area you selected, and the current position of the mouse (in latitude and longitude) when the mouse pointer is within the map image (Figure 15). When the mouse pointer is not within the map image, the current values are blanked out. The last piece of information is the estimated size of the data file to be retrieved, based upon the parameters you have selected. The estimated size of the data file is displayed in kilobytes. Note: 1000 kilobytes = 1 megabyte.

## **3.1.9 Extracting And Using The New Met File**

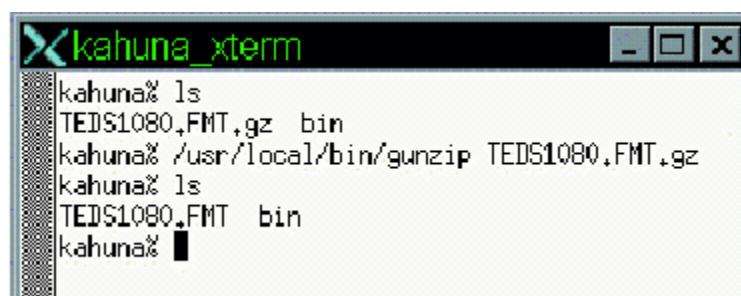
After you have downloaded and saved the COAMPS data file, you will need to unzip (decompress) the file. You may have noted that the file ends with the file extension ".gz". The extension means the file was zipped using a UNIX compression utility. If you are using a PC, it is recommended that you use Winzip to decompress the file (Figure 10). If you have Winzip on your PC, simply double click on the compressed file name or icon. Winzip will launch automatically and lead you through the extraction process. Press Extract to decompress the file. Next you will be prompted to select a location where you wish to save the extracted file.



**Figure 10. The Winzip utility will allow you to extract your data file.**

Note: If you do not have Winzip installed on your PC, you may obtain the software from the following website: <http://www.winzip.com>.

If you are working on a UNIX machine, it is recommended that you use the command **gunzip** to decompress the file as shown in Figure 11. Gunzip must be executed on the Unix command line. Gunzip does not have an associated GUI. To obtain information on gunzip and its respective arguments, type **man gunzip** at the command line prompt.



**Figure 11. On a UNIX system, utilize gunzip to extract your file.**

Once you have extracted the data file, it is ready for use with the VLSTRACK application. In addition, you may choose to view the file as text using Notepad on your PC or a similar text viewing/editing utility. For further information on running VLSTRACK, refer to the VLSTRACK User's Guide listed in the References section of this document.

## 4 TROUBLESHOOTING

### ***What if the File ends with .ERR?***

A file with a “.ERR” extension means the server encountered an error while retrieving the data. Simply open the file in Notepad or any word processor. You will be given information on what the error was and hints on how to fix the problem.

### ***What if my area of interest is not available?***

The VLSTRACK - TEDS Interface uses COAMPS data generated by COAMPS-OS. To obtain data for an area that is not currently available, contact your COAMPS-OS administrator.

***I am able to select an area and time frame, and run the VLSTRACK server. The progress window appears showing the server's status. It then disappears, but I don't see any more windows. I do not get a Save dialog once the progress window disappears.***

The Java plug-in might not have permission to download and save a file to your hard drive. Please review the section above titled “Configuring System Permissions”.

### ***What if a “load Java Plug-in” icon appears on the page titled COAMPS-OS – VLSTRACK Data Retrieval?***

Your web browser requires Java Runtime Environment 1.3.x and the associated Java Plug-in 1.3 to run the VLSTRACK - TEDS Interface applet. Click on the icon to download the Java Plug-in and follow the instructions to load the software onto your system. Alternatively, refer to the following web site to download the appropriate Java files: <http://java.sun.com/products/plugin/1.3/plugin-install.html>.